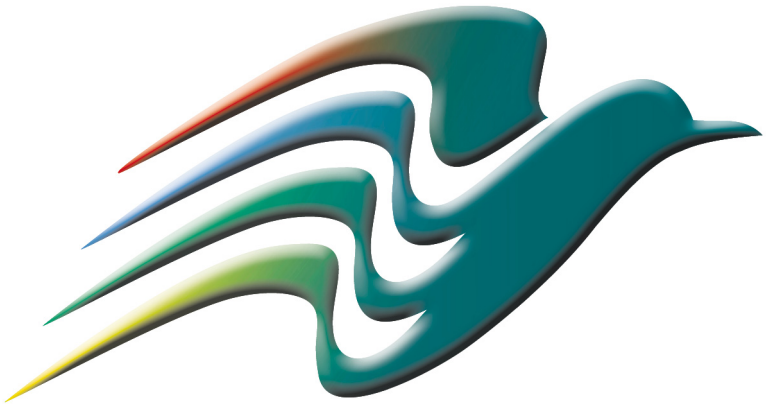

SUPER-FLASH

INTEGRATED ENVIRONMENT FOR GUIDED DEVELOPMENT OF INDUSTRIAL SUPERVISION APPLICATIONS

BROCHURE

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1 Introduction

SUPER-FLASH is a software development system which Automa has made for guided development of supervision and human-machine interface applications (SCADA/HMI).

The aim of this brochure is to provide companies which intend to use a Development System to make Industrial Supervision applications with general elements in order to evaluate SUPER-FLASH.

Selection of an adequate Development System to meet company requirements is very important: it is not only about finding a work tool, but also about making some technological decisions, finding new human resources to train adequately, interpreting a commercial proposal in the best way to obtain a positive outcome in their dealings with customers, etc.

Being aware of this, Automa wants to provide its potential customers with clear information, thereby making it possible for them to make a knowledgeable choice.

This brochure is therefore addressed to technical staff and those in charge of taking technical and commercial decisions and who intend to evaluate SUPER-FLASH.

SUPER-FLASH is a SCADA/HMI package made entirely by Automa who sees to its marketing and technical assistance.

A complete, usable and free version of the SUPER-FLASH RUNTIME version can be downloaded from our website: www.automa.it.

Enjoy your read

2 Technical proposal

SUPER-FLASH is a Development System for the making industrial supervision (SCADA) and human-machine interface (HMI) applications.

Applications developed using SUPER-FLASH can be limited to monitoring a plant or machine, or go further to include supervision and control functionalities with the aim of "managing" the production situation by means of one or more PCs.

To make these applications, SUPER-FLASH:

- provides numerous communication drivers for PLCs and the most widely-used field buses
- can be programmed to associate "events" with "actions" in a simple way"
- has a set of ready-to-use modules to solve the most common problems
- allows development of efficient graphic interfaces so that the information can be organised in a fully personalised way

In particular, applications developed with SUPER-FLASH have all the basic features needed to integrate with the company environment they are inserted in.
Nowadays the need for integration is particularly felt and Automa proposes vertical solutions with supervision applications at their bases, also developed with SUPER-FLASH.

SUPER-FLASH is widely backed up by numerous qualified services provided directly by Automa: among others, we mention our telephone assistance and training courses.

2.1 Typical functionalities of HMI applications

The HMI and SCADA applications are generally at the service of operators in charge of control and management of industrial processes.

These applications must necessarily offer some basic functionalities:

1. Reading and Writing process variables
2. Animated mimic diagrams with values of the process variables
3. Management of Realtime and Historical Alarms
4. Management of Realtime and Historical Trends
5. Management of Recipes

Nowadays one normally talks of HMI applications: the difference between these and SCADA applications is almost never underlined. The main distinction between the two types of applications consisted in the presence of the capacity to produce historical files. Now it can be said that all HMI applications have this capacity integrated in them.

An HMI application is normally connected to PLCs, or to other intelligent devices able to "physically" control the process by means of suitable I/O.

HMI applications are also required increasingly often to be capable of "integrating" with existing information systems. One is therefore speaking about horizontal integration, i.e. communication between applications of the same level, and vertical integration, i.e. connection with the higher level, generally an MES, or EPS system, delegated to management of production.

Since specific standards for all integration problems have not yet been defined, SUPER-FLASH offers a series of functionalities and tools expressly thought up to facilitate integration.

2.2 Main functionalities of Super-Flash

The main functionalities of SUPER-FLASH are described below. References for accessing some in-depth information are given for each of these.

Communication

SUPER-FLASH offers numerous drivers for the most popular PLCs and for field buses connected through RS232, RS422 and RS485 serial communication networks, as well as, through Ethernet.
End-users may develop their own communication drivers with MICROC or by developing DLLs to integrate with those supplied by peripheral manufacturers.

Page 18

Design

The design of application graphic interfaces is completely at end-users preferences: SUPER-FLASH integrates an advanced graphic editor that permits the edit of special high-level objects (variables, trends, buttons, bar-graphs, etc.) along with the basic ones (text, squares, etc.).

Page 19

Variables

The variables archive puts information controlled by applications all together. The variables archive keeps field data orderly, as well as, applications generated data.
Variables can be of different types: some special types allow the manipulation of complex information.

Page 20

Trends

Trends allow easier recording and monitoring of real-time analogical variables.

Page 21

Alarms

The “Alarms management” functionality allows to control easily the most common problematics connected to alarm detection and warning.

Page 22

Recipes

This functionality allows to identificate a significant values group for reading or writing on PLCs, as well as, to save it on hard disks.

Page 23

Event management

Event management provides the secure recording of all process events onto disk. It facilitates the synchronisation between SUPER-FLASH applications (HMI) and those of MES level (EPS) in charge of data collection and production management.

Page 24

Multiplatform

An application developed with SUPER-FLASH may run without significant alterations on PCs equipped with Windows (XP-PRO, XP-E, Windows 7 32/64 bit) and Linux with WINE.

Page 25

Multilingual

SUPER-FLASH supplies tools for the development of multilingual applications. If adequately configured, applications can be translated into various languages also after applications development phases.

Page 26

Integration with MicroC

MICROC is a .C compiler that builds programs to be executed by SUPER-FLASH applications. With MICROC, end-users may extend enormously the development system functionalities thanks to the availability of more than 600 functions.

Page 27

Integration

The ability to integrate with the exterior is one of SUPER-FLASH fundamental features and it offers various opportunities to those wanting to integrate a supervision application with their own process control or business information systems.

Page 28

2.3 Numbers

The table below gives the main numbers of SUPER-FLASH. Both the RUNTIME and the ROYALTY-FREE LICENCES are offered in sizes, which vary according to the number of variables and alarms. The other numbers are identical for all the licence sizes available.

Description	Value
Development System languages (Italian, English and German)	3
Variables (**See note 1**)	30,000
Graphic pages	10,000
Maximum graphics resolution available	4,000 x 4,000 pixel
Number of colours managed	16 million
Number of communication channels	100
Programs	10,000
Instructions per program	1,000
MICROC programs	10,000
MICROC Drivers	1,000
Link Drivers	1,000
Dynamic objects per page	10,000
Trending variables	10,000
Curves for each trend frame	12
Alarms (**See note 1**)	30,000
Number of recipes	Unlimited
Variables per recipe	30,000
Dimensions of block variables	256 byte
Dictionaries supported for the application	50
Number of resources for each dictionary	10,000
MICROC active contemporarily	256

Note

1) the actual number of these resources depends on the licence size

2.4 Minimum requirements for the Development System

The Development Systems (SFW) requires the following configuration:

Component	Minimum requirement
Operating System	Windows XP Professional SP3 with Internet Explorer 7
Processor	Pentium 4 \ Athlon
System memory	512 Mbyte
Disk space required	90 Mbyte
Graphics card resolution	1,024 x 768 x 64K colours
Ports	Parallel or USB
Other peripherals	CD-ROM

2.5 Minimum Requirements for Super-Flash Applications

The requirements of the target machine, i.e. the one on which the final application is to be installed, can differ from the requirements of the machine used to develop the application.

The target machine must operate the runtime engine which will in turn allow controlled operation of the application developed by the programmer.

The Runtime engine of SUPER-FLASH is highly efficient and its size is less than 4 Mbyte!

SUPER-FLASH applications are usually not very demanding regarding storage supports and CPU power. However, it is not possible to establish the requirements beforehand since these may change depending on two important factors:

- selection of the Operating System on the target machine
- characteristics of the application made

Selection of an Operating System strongly conditions the machine requirements. Just think of the different requirements of the Linux environment compared to the Windows environment: or of XP Embedded compared to XP PRO.

Furthermore, certain requirements depend heavily on the characteristics of the application. For example, data recording is important in a monitoring application and so the disk space needed must be carefully assessed; in an on-board machine application there may be the need to use the touch-screen instead of the keyboard; an application for remote control of data does not need recording supports such as a floppy disk or burning a CD-ROM, etc.

2.6 Architecture

SUPER-FLASH allows management of projects aimed at developing supervision applications. The prevalent sphere of use of these applications is industrial automation where reliability, i.e. continuity of operation over time, is a very important value.

For the purpose of guaranteeing a high level of intrinsic reliability, SUPER-FLASH basis its operation on a software engine, i.e. a virtual machine, thoroughly tested and tried out, able to carry out all the checks needed in runtime to ensure controlled execution of each action foreseen by the programmer.

The engine-based architecture allows the programmer to carry out on-site interventions with peace of mind, without the problem of having to carry out too many operating tests outside the context in which the modification was made.

A SUPER-FLASH project contains all the source files made by the developer. The application is the end product consisting of the executable files.

The SUPER-FLASH package consists of two functionally different software products.

The first is the actual Development System (consisting of SFW.exe and of some DLL), i.e. the environment the developer works in to manage the project. The Development System can only be installed on a PC with Windows Operating System.

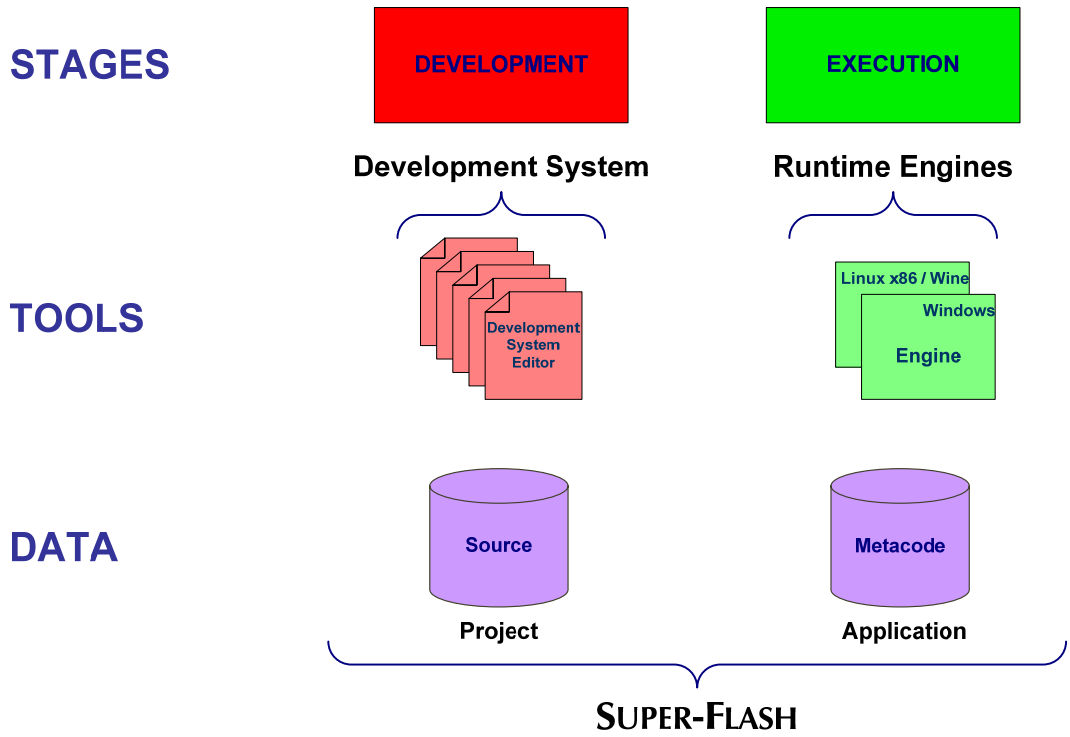
The second is the application runtime engine (WRunfile.exe), i.e. the software which allows end users to “run” the final application.

The SUPER-FLASH runtime engine runs the applications on Windows and Linux operating systems.

For the Linux operating system, operation of the motor is based on WINE (Wine Is Not an Emulator). WINE makes a Linux version of the API available for Windows. This way WINE is able to execute an EXE product for Windows. Since SUPER-FLASH does not refer to MFC, compatibility is facilitated.

The following image schematically shows the system architecture.

SUPER-FLASH: ARCHITECTURE



3 Commercial offer

For SUPER-FLASH, Automa proposes two complementary commercial strategies:

- SUPER-FLASH ROYALTY-FREE
- SUPER-FLASH RUNTIME

Distinguishing between development system and runtime licence on the applications, one of the two items is free of charge (change) with both methods.

	Development System license	Application license
ROYALTY-FREE SUPER-FLASH	on payment	free
SUPER-FLASH RUNTIME	free	on payment

Having two complementary methods available allows customers to evaluate which of the two solutions best suits the requirements of their reference market.

3.1 Super-Flash Royalty-Free

With this method, you purchase a development system and there are no Royalties on the individual applications.

This choice foresees purchasing a true “producer good”. The investment must be spread over a certain number of applications.
Since there are no Royalties on the applications, once the initial investment has been recovered, the licence cost of each individual application will be close to nil.

The ROYALTY-FREE version is the most appropriate one when a large number of applications are expected.

Those who choose the ROYALTY-FREE method purchase a specific version of the development system. It is possible to sign up for an annual upgrading service, which allows the customer to be sure of getting the new versions issued by Automa.

The SUPER-FLASH ROYALTY-FREE licences are supplied with costs varying according to their size, i.e. the maximum number of variables and alarms which can be managed.

The licence sizes currently available are:

Tipo di licenza	N° di variabili	N° di allarmi
RF/VM	25	25
RF/LM	50	50
RF/EM	100	100
RF/SM	300	200
RF/MM	500	300
RF/HM	1.000	600
RF/NM	3.000	1.000
RF/PM	5.000	3.000
RF/TM	7.000	5.000
RF/XM	10.000	16.000
RF/ZM	30.000	30.000

There is the possibility to increase the size of the licences purchased.

Purchasing a ROYALTY-FREE licence is an investment which the customer amortizes over time, with an economic return which depends on the number of applications developed.

3.2 Super-Flash Runtime

With the RUNTIME method, the development system is completely free of charge: you only buy the RUNTIME licences whose cost depends on their size, i.e. on the maximum number of variables and alarms.

With this solution, the initial investment is limited to your own time: there are no costs for purchasing the development system. You can download the product from the Internet and start to use it. A RUNTIME licence, free of charge, allows you to launch the application developed for a maximum time of 15 minutes, to check its operation.

Following development, to install the application at the user's premises, it is be necessary to buy a RUNTIME licence sized according to your needs (number of variables and alarms).

The RUNTIME licence therefore allows you to eliminate investments and deal with purchases of the SUPER-FLASH licences only when needed to fulfil orders from your customers.

With SUPER-FLASH RUNTIME the user can run the Development System free. To run the applications made for more than 15 minutes, users can buy licenses, consisting of a hardware or software key, whose price depends on the number of resources used, according to the following table:

Tipo di licenza	N° di variabili	N° di allarmi
RT/VM	25	25
RT/LM	50	50
RT/EM	100	100
RT/SM	300	200
RT/MM	500	300
RT/HM	1.000	600
RT/NM	3.000	1.000
RT/PM	5.000	3.000
RT/TM	7.000	5.000
RT/XM	10.000	16.000
RT/ZM	30.000	30.000

The RUNTIME licences are provided with a protection device to be chosen among:

- Software activation code
- USB key

SUPER-FLASH RUNTIME can be downloaded from Automa's website at:
www.automa.it
Try it! It's free …

3.3 Supply

The SUPER-FLASH product can be supplied via courier or e-mail, depending on the type of Licence and protection.

For both commercial methods (ROYALTY-FREE and RUNTIME), the supply includes: SFW (Italian, English, German), MICROC, WRUNFILE, RUNFILE.INT (RUNFILE.ITA, RUNFILE.DEU, RUNFILE.ENG, RUNFILE.ESP), DIAL, TFS, DBF, REAL and TRENDOUT.

For all the sizes available and only with the ROYALTY-FREE method, the supply includes the Protect product and the ROYALTY-FREE version of SUPER-FLASH OPC CLIENT.

Only with the ROYALTY-FREE method, and exclusively for the top-of-the-range version, i.e. for RF/ZM with 30,000 variables and 30,000 alarms, the supply also includes the ROYALTY-FREE version of the SMARTDB and WAM products.

The software supplied is covered by a warranty lasting 24 months during which the following will be replaced free of charge:

- damaged storage supports
- hardware protection devices

The warranty on the protection devices only covers replacement, or repair, on return to Automa of the faulty device.
Theft and loss are not covered under the warranty offered with supply of the software. A specific guarantee service can be activated for these cases.

During validity of the warranty, the protection devices will be repaired or replaced, at the cost established in the Price List in force.

The shipping costs are always to the customer's charge.
Supply of the licences does not include any additional services in relation to the guarantees described above.

3.4 Services

The SUPER-FLASH product is supported by a set of services that Automa makes available to make learning and using the product easier.

Service	Description
Training	The user can make the learning process easier, faster and more concrete by attending the training courses provided by Automa. Besides a standard training course, Automa organizes ad-hoc courses to answer specific training requirements. The service is supplied by the developers of SUPER-FLASH themselves.
Telephone Assistance	Automa supports the user's job by means of its telephone assistance service, ensuring rapid and professional answers. This service is divided into two types: free and on payment. This service is provided by the developers of SUPER-FLASH themselves, with methods to access it defined according to the type of service. An operator answers the calls directly without numeric selection filters. Access to the service on payment is regulated by a specific contract, which, according to the customer's needs, can last from 1 to 12 months.
Software Upgrade	For the owners of a ROYALTY-FREE license, a continuous software updating service is available: by stipulating an annual service contract, the user purchases the right to receive all the upgrades made during the year covered by the service. For the owners of a RUNTIME license, the upgrades are always available free of charge and can be downloaded from the Automa internet site: www.automa.it.
Repairs	Automa provides a rapid repair or replacement service in the case of a fault in the protection device of its own products.
Theft and loss guarantee	In cases of theft or loss of the protection device of its own products, Automa has thought up a specific service to "guarantee against theft/loss", activated by means of stipulating an annual contract, which covers reintegration of the stolen or lost device, solely with the cost of its replacement. Should the device be found again, it must be sent back to Automa.
Renting	With this service, users have the possibility of temporarily using another hardware key, i.e. a ROYALTY-FREE Development System licence.

3.5 Supervisione Libera

SUPER-FLASH is the cutting edge product of a complete line of products called SUPERVISIONE LIBERA. This line came about to group a series of software tools destined for companies dealing with industrial automation together in a homogenous way.

Apart from SUPER-FLASH, the SUPERVISIONE LIBERA line includes numerous other optional products supplied with the RUNTIME method, i.e. with a licence which can be used for a single application, or with the ROYALTY-FREE method, i.e. with a licence which can be used for an unlimited number of applications.

Automa not only offers products, but also its twenty years' of experience in the complex world of communication and integration, providing support in choosing the best standard solution available, or answering specific requirements with made-to-measure software.

M-BOX: it is a product which makes it possible to send e-mails from a SUPER-FLASH application by interfacing with a commercial mail server.

MODBUS TCP/IP: it is a DLL driver which allows a SUPER-FLASH application to interface, as master, with peripherals which implement the slave side of the "MODBUS RTU" and "MODBUS on TCP/IP" protocols.

MODBUS32: it is a MICROC driver which allows a SUPER-FLASH application to manage reading and writing of 32-bit resources of Control Techniques "Unidrive SP" peripherals.

S7-HMI ADAPTER: it is a DLL driver which allows a SUPER-FLASH application to be put in communication with the SIEMENS S7-300/400 PLC over an MPI port by means of the SIMATIC S7 HMI Adapter.

SENDSMS: it is a MICROC driver which allows a SUPER-FLASH application to send SMS (Short Message Service) by means of a GSM (Global System for Mobile communication) modem.

SFABXETH: it is a DLL driver which allows a SUPER-FLASH application to manage communication with one or more Allen-Bradley Logix5000 Controllers PLCs using the Logix5000 messenger over Ethernet/IP for access to the Tags (Bool, Sint, Int, Dint and Real).

SFBERPVI: it is a DLL driver which allows a SUPER-FLASH application to manage communication with B&R PLCs trough PVI.

SFNETLINK: it is a DLL driver which allows a SUPER-FLASH application to communicate in MPI and Profibus with the Siemens S7 300/400 PLCs by means of the NetLink ethernet gateway made by Hilscher.

SFSIEETH: it is a DLL driver which allows a SUPER-FLASH application to manage ethernet communication with Siemens and VIPA PLCs using Industrial Ethernet.

SFOMETH: it is a DLL driver which allows a SUPER-FLASH application to manage ethernet communication with Omron using TCP/IP FINS.

SFSBUSDM: it is a DLL driver which allows a SUPER-FLASH application to manage communication with a SAIA PLC network in Ethernet as well.

SMARTDB: this product allows a SUPER-FLASH application to access a database to write and read data. One of the major plus points of the product is its capacity to exchange information with most of the databases present on the market, as it implements the ODBC standard and Microsoft OLE DB technology, and allows execution of SQL commands.

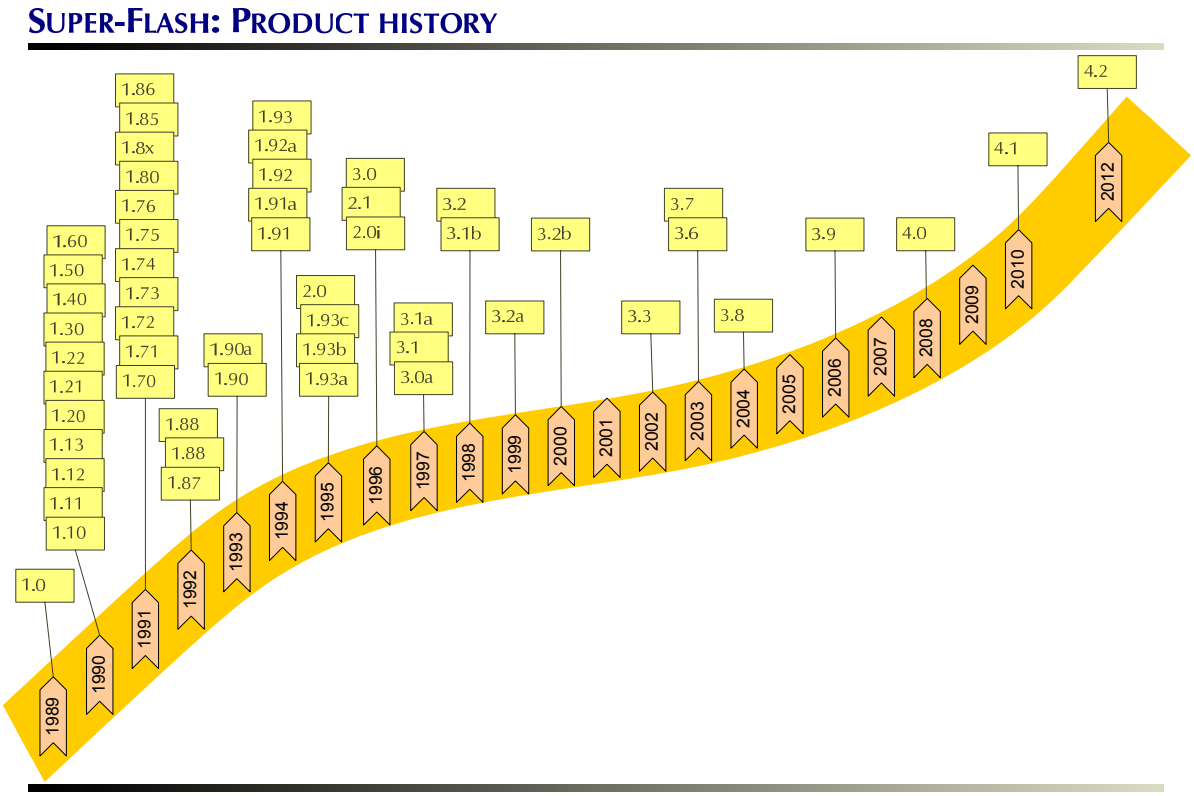
SUPER-FLASH OPC CLIENT: it is a driver which allows connection of SUPER-FLASH applications for Windows to peripherals which supply an OPC server conforming to 2.0 Data Access specifications.
OPC technology (OLE for Process Control) is a very widespread proprietary technology, based on Microsoft technologies, which makes it possible to put applications and peripherals in connection with each other.

TWINDRV
By means of the DLL driver technology, the TWINDRV driver allows high speed communication between a SUPER-FLASH application and the Beckhoff Twincat Soft-PLC, managing byte, word and double word type resources.

WAM: it is a web application available at the address: www.sfwam.it, is capable of displaying realtime and historical alarms, taken directly from the field. The WAM interface has also been designed to be displayed effectively on devices such as PDA, Pocket PC, UMTS telephones, connected to the network in Wi-Fi mode. WAM is open software, delivered with the ASP sources and with a ROYALTY-FREE licence. It can be fully customised, for example with information about production, traceability of lots, scheduling, etc.

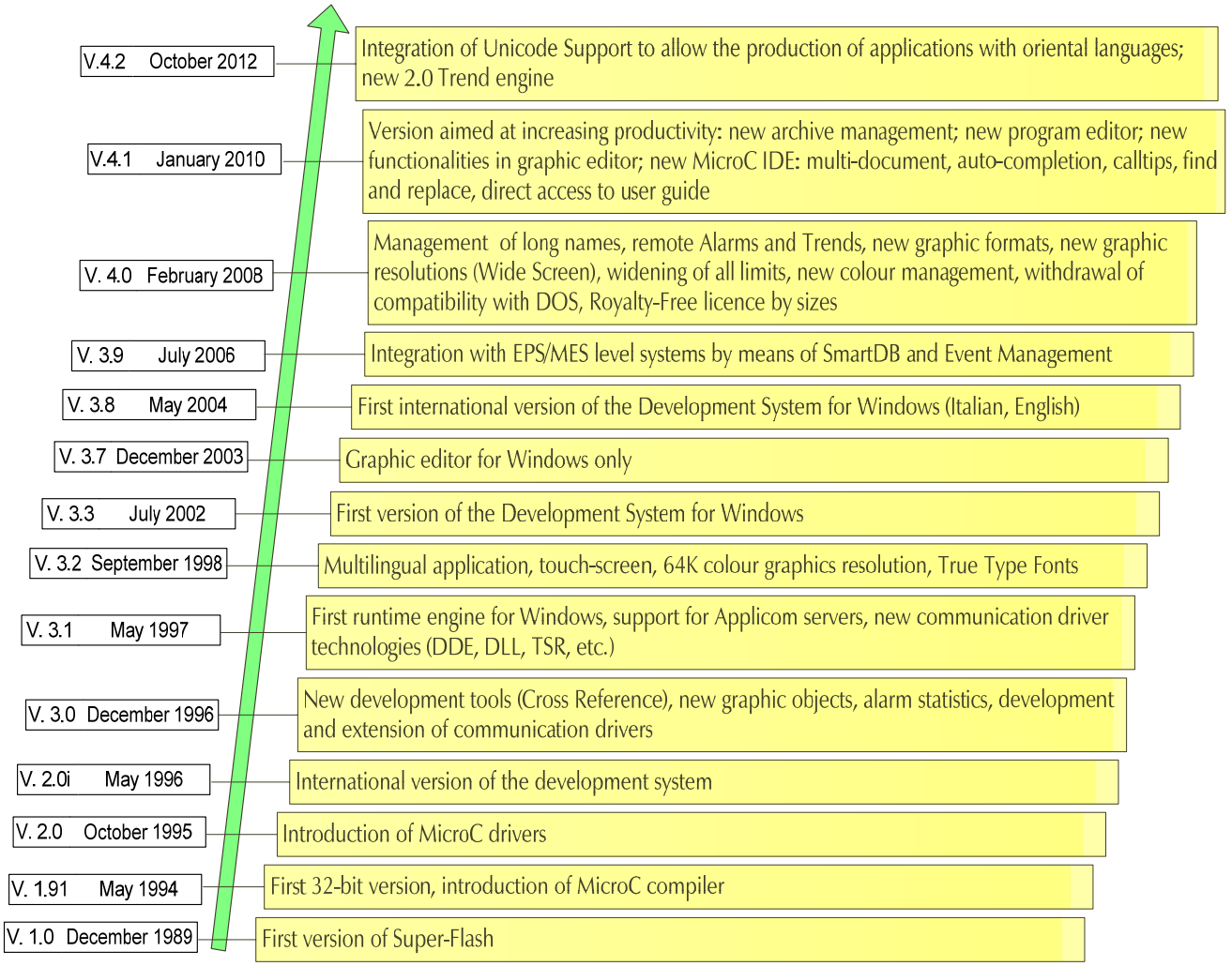
3.6 Product Evolution History

The first version of SUPER-FLASH was launched in 1989 and, over the course of the years, the product has been implemented with additions of new features. The diagrams show the product versions launched up to the date this document was drawn up, as well as the most important versions.



In 2012 Automa celebrated twenty-five years of activity. In 2014 SUPER-FLASH, too, will reach its first twenty-five years: a considerable achievement for any software product!!

SUPER-FLASH: SIGNIFICANT VERSIONS


V.4.2 October 2012
Integration of Unicode Support to allow the production of applications with oriental languages; new 2.0 Trend engine
V.4.1 January 2010
Version aimed at increasing productivity: new archive management; new program editor; new functionalities in graphic editor; new MicroC IDE: multi-document, auto-completion, calltips, find and replace, direct access to user guide
V. 4.0 February 2008
Management of long names, remote Alarms and Trends, new graphic formats, new graphic resolutions (Wide Screen), widening of all limits, new colour management, withdrawal of compatibility with DOS, Royalty-Free licence by sizes
V. 3.9 July 2006
Integration with EPS/MES level systems by means of SmartDB and Event Management
V. 3.8 May 2004
First international version of the Development System for Windows (Italian, English)
V. 3.7 December 2003
Graphic editor for Windows only
V. 3.3 July 2002
First version of the Development System for Windows
V. 3.2 September 1998
Multilingual application, touch-screen, 64K colour graphics resolution, True Type Fonts
V. 3.1 May 1997
First runtime engine for Windows, support for Applicom servers, new communication driver technologies (DDE, DLL, TSR, etc.)
V. 3.0 December 1996
New development tools (Cross Reference), new graphic objects, alarm statistics, development and extension of communication drivers
V. 2.0i May 1996
International version of the development system
V. 2.0 October 1995
Introduction of MicroC drivers
V. 1.91 May 1994
First 32-bit version, introduction of MicroC compiler
V. 1.0 December 1989
First version of Super-Flash

4 In-depth information

4.1 Communication

In supervision systems, one of the most fundamental characteristics is their opening towards the field, which means full communication possibilities towards various devices (PLCs, thermoregulators, balances, etc).

SUPER-FLASH is open to the most common field buses (Profibus, FipWay, BitBus, Interbus, CANbus, etc.) and to network communications (NetBios, TCP/IP, H1, Industrial Ethernet, etc.) by means of:

- Applicom cards
- Applicom software
- Hilscher Gateway
- OPC Client
- DLL
- DDE (server and clients)
- MicroC Drivers and programs

SUPER-FLASH is equipped with a rich series of communication drivers. All the drivers mentioned are included in the package, free of any additional charges.

▪ ABB Procontic CS31 ▪ ABB Procontic T200 ▪ ABB Procontic T200-MP ▪ Allen-Bradley PLC5-MP ▪ Allen-Bradley SLC 500 ▪ Allen-Bradley SLC500-MP ▪ Allen-Bradley PLC5-ETH ▪ Applicom Database ▪ Applicom Standard ▪ Ascon ▪ BITBUS ▪ BITBUS Master Handling ▪ Disco ▪ Ero ▪ Eurotherm 808/847 ▪ GE Fanuc SNP ▪ GE Fanuc SNP-MP ▪ Gefran	▪ Hitachi Hitachi-MP ▪ Klöckner Moeller PS316 ▪ Klöckner Moeller PS32 ▪ Klöckner Moeller PS4-200 ▪ Mitsubishi CP4 ▪ Mitsubishi CP4 Extended ▪ MODBUS RTU ▪ MODBUS Plus Omron ▪ Omron SYSMAC LINK ▪ OSAI Allen-Bradley GP8600 ▪ Profibus DP (Applicom) ▪ Profibus FMS (Applicom) ▪ Saia PCA ▪ Saia PCA T90 ▪ Saia PCD ▪ Saia SBUS ▪ Saia SBUS Modem	▪ Siemens P3964 con RK512 ▪ Siemens P3964R con RK512 ▪ Siemens Progr. ▪ Siemens Progr. CP945 ▪ Siemens S5-H1 (Applicom) ▪ Siemens S5-MSG (Applicom) ▪ Siemens S7-200 ▪ Siemens S7-H1 (Applicom) ▪ Siemens S7-MPI (Applicom) ▪ Siemens Sinec L1 ▪ Sistema ▪ Super-Flash ▪ Terminale ESA VT ▪ Texas 520-> 535 ▪ Texas 545-> 575 ▪ TSX Réglage ▪ TSX Unitelway ▪ TSX Unitelway-MP

'Super-Flash' has also been mentioned among the drivers as it allows the two SUPER-FLASH applications to be connected to each other.

4.2 Design Graphics

Supervision systems usually allow a process to be observed by means of a PC monitor. The graphics feature becomes essential in helping to highlight situations to be kept under control. An adequate graphics interface helps operators to focus their attention on what is considered to be the most important part of the process. SUPER-FLASH allows meaningful, very neat and good-looking applications to be prepared. The time needed to develop applications which use a lot of graphics depends greatly on the power of the drawing tool. The SUPER-FLASH Graphics Editor has the application database (Variables) and animation tool online: it therefore allows considerable time-saving during debugging the pages developed. The presence of specialised high-level objects (Variables, Objects with Thick-Relief effects, Buttons, Trends, Bar-Graphs, etc.) makes preparing the graphics interface pages extremely simple, visual and immediate.

- Object-oriented editor, with realtime animations and communications
- Graphics resolution up to 4,000 x 4,000 pixels
- Colour with 32 bit depth (16 million colours)
- Up to 10,000 dynamic objects per page
- Basic objects: straight lines, segmented lines, boxes, ellipses, icons, texts, fillers
- Advanced objects: Variables, Buttons, Hot-Spots, Trends, Bar-Graphs, Resource Texts
- Predefined boxes with relief and depth effects
- Bar-Graph with colour changes on thresholds and filling effects for irregular forms
- Simplified object conditioning with associated colour tables
- Object position and dimension conditioning with automatic scaling
- Display of sequences of images, with automatic sizing
- Direct use of standard image formats (BMP, PNG, JPEG, GIF and TIF)
- Management of user-made symbol and object libraries
- Page Editing with enabled zoom
- Multi-level hierarchical grouping of objects
- Simplified management for renumbering page variables
- True Type font (TTF) management
- Possibility of using Windows system colours

4.3 Variables

The variables archive is where all the information managed by the application is collected together and is its database. Field data and those generated directly by the application are kept in the archive in an ordered way.
The variables are of heterogeneous type: the wealth of types of specialised variables (system, data, time variables, etc.) simplifies some highly complex programming operations of the automatic supervisor activities.
The variables can be supported by a driver that allows data acquisition from peripherals, including another SUPER-FLASH application. The user can also create variables supported by the "System" peripheral: this is the information generated directly by the application.
The possibility of interfacing with the MICROC compiler provides SUPER-FLASH with a powerful tool for carrying out complicated calculations and for operations on files, on serial lines or TCP/IP sessions, in order to manage the application database.
Using MICROC, the user can also modify at runtime the characteristics of the variables defined in the SUPER-FLASH database.

- 1, 16, 32 bit numerical variables
- 256 byte alphanumerical variables
- 256 byte block variables
- Message variables (can be addressed with PLC numerical codes)
- Calculated variables (45 different operators available)
- Date and time type variables
- Disk variables bound to ASCII format file fields
- Threshold control for OPERATOR INPUT operations
- Automatic linear, bidirectional, value scaling
- Specific updating time for each variable
- Reading/writing enablement for each variable
- System variables – Date, Time, Internal timers and general machine data
- System variables – Communication errors and enablements, access to drives
- System variables – Recipe Management
- System variables – Alarm Management
- System variables - File Manager
- System variables - Touch-Screen Management
- System variables – Multilingual Management
- Variables connected with other SUPER-FLASH application databases
- Search and Replace commands, over the whole archive, of peripheral and serial line type
- MicroC driver variables

4.4 Trends

SUPER-FLASH Trends, which record and display the trend of a quantity over time, are easy to implement and very powerful.
For reasons of display efficiency, the historical Trend data are recorded in a proprietary format. In any case, MICROC functions which allow simplified access to the recorded data are available. By means of these functions, production of files suitable for being treated by other standard software is easy.

Recording

- 10,000 trending variables
- Historical life and buffer memory dimensions definable for each variable
- Automatic purge
- Fixed step or trigger recording
- Deferred recording (with MICROC)
- Simple conversion of Trend files into CSV files, i.e. in ASCII format with separators (with MICROC)

Trend Frames

- 12 pens for each Trend frame
- Realtime and historical Trend frames simultaneously
- Zoom with cursor area or touch
- Multiscale Trend
- Thickness and type for each curve
- Up to 3 reference bands
- Trend display with preset origin
- Pointer on curves with dynamic display of values and date-time acquisition
- Rapid positioning at specified date-time
- Rapid positioning at first valid datum
- Possibility of highlighting time intervals with loss of data
- Different colour for cursor values area and curves area, with transparent background
- Display of icons (even with transparency) for window background, curves background and values background
- Window background with transparency

Runtime

- Instructions for enlargement, reduction and change of position
- Display from remote files
- Runtime information, in user variables, about x-axis (origin date/time –diagram base) and y-axis (ymin and ymax)
- Informazioni realtime in variabili utente sui valori intercettati dal cursore
- Local/remote recording
- Realtime change of Trend parameters (variables, colours, scale, etc.)

4.5 Alarms

SUPER-FLASH offers user-friendly Alarm Management, complete with history and online hypertextual user manual, consisting of texts and graphic images. SUPER-FLASH allows alarm management with dynamic descriptions to display and record the runtime values present at the time of the alarm onto disk and onto paper. The presence of periodic alarm statistics adequately completes SUPER-FLASH standard Alarm Management. Alarms are also accessible from MICROC functions.

- Up to 30,000 bit alarms
- MultiPLC alarm Management
- Alarms compressed in word
- Freely customised alarm descriptions
- Alarm printout (date-time-start/end-alarm description)
- Daily recording on ASCII files of all alarms,
- Historical life definition, with automatic purge
- Display, with printout, of the historical alarm files
- Alarm management accessible from any page
- Automatic indicator for “alarm in progress” on every page
- Data of the first and last alarm in progress available on every page
- Cyclical display of all alarms in progress available on every page
- Alarms description enriched with runtime variables
- Alarm acceptance with free operating notes
- Periodic statistics for each single alarm
- Periodic statistics for all alarms
- User manual with hypertextual links for each alarm (with texts and images)
- Simple access to historical data and statistics from dedicated MICROC functions
- Organisation into groups
- Access to information from dedicated MICROC functions
- Automatic generation of all events (start, end, acceptance time, etc.)
- Alarm descriptions which can be associated with an external file (in PDF, WORD format, etc.)
- Local/remote recording of historical data and statistics
- Local and remote alarm management.

4.6 Recipes

SUPER-FLASH considers a recipe as a group of values, contained in Variables, which is managed in order to perform data saving to disk, subsequent retrieval operations and their transfer to the peripheral. To help identification of this group of values, a name given during the creation phase is then used to access the grouped data (Recipe).
The term Recipe therefore has a very general meaning and represents a group of data identified by a name. A Recipe can be created, displayed, cancelled, sent to a peripheral, etc.
For example, Recipes can be used in product-oriented applications, i.e. where the recipe data establish the characteristics of the product to be processed.
Numerous possibilities are provided by the system for Recipe manipulation. Furthermore, the Recipes are also accessible from MICROC functions.

- Management of unlimited number of multidirectories
- Multipage disk recording
- Disk recording on event trigger (also from PLC)
- Disk recording by means of selection windows
- Transmission to peripherals by means of keyboard
- Transmission to peripherals by means of events
- Transmission to peripherals on selection list
- Automatic windows for editing recorded data
- Automatic display windows to view the recorded data
- Recorded data editing on customized pages, without passing through the PLC
- Use of alphanumerical variables, also those read from peripherals, as Recipe names
- System variables with path, name and extension of the active Recipe
- Selection window with browsing functions of fields configurable within the Recipes
- Possibility of free and easy access from dedicated MICROC functions
- 30,000 variables per recipe
- Recipe management on local or remote disk

4.7 Event Management

Communication between different levels of information systems is now a widespread and highly felt need. The information coming in from the field must be made available to production and maintenance so that use of the plants can be made increasingly more efficient.
Putting the two "worlds" in communication with each other is not, however, sufficient to effectively manage the passage of data. Above all it is necessary to synchronise them. In fact, the two levels travel at different speeds and the higher one does not always manage to acquire data at the same speed as the field. But that is not all: not all the data have to be transferred, but only the significant data. For this reason it is necessary to free data collection from their archiving.

To help users in the difficult task of passing on the information, SUPER-FLASH makes "EVENT MANAGEMENT" available. In fact, the supervisor will be able to create a secure queue of events which will later be entered in a database, sent by e-mail, sent by SMS, etc. The advantages of this performance are obvious: the user can manage an almost unlimited number of events simply and securely with a great saving in time, not only for implementation of this functionality, but also for system maintenance.
An example of a functionality which exploits the events is alarm management, where all the events (start, end, acceptance, duration, etc…) can (having been activated during configuration) be extracted from the event queue to make it possible for them to be archived in a DB or sent by SMS or e-mail.
At the moment event management can only be exploited by MICROC, but in future some instructions in the programs will be made available.

The events are put in a secure first-in first-out queue, recorded on disk. There are two types of events: "Basic" or "ExtraData".
Each event consists of the following information:

- Category (numerical): 0 - 4999 (user categories); 4999 - 5000 (system categories)
- ID (numerical)
- Date and Time
- 1 Number (numerical)
- 1 String (alphanumerical)
- 64K of user data (only ExtraData events)

4.8 Multiplatform

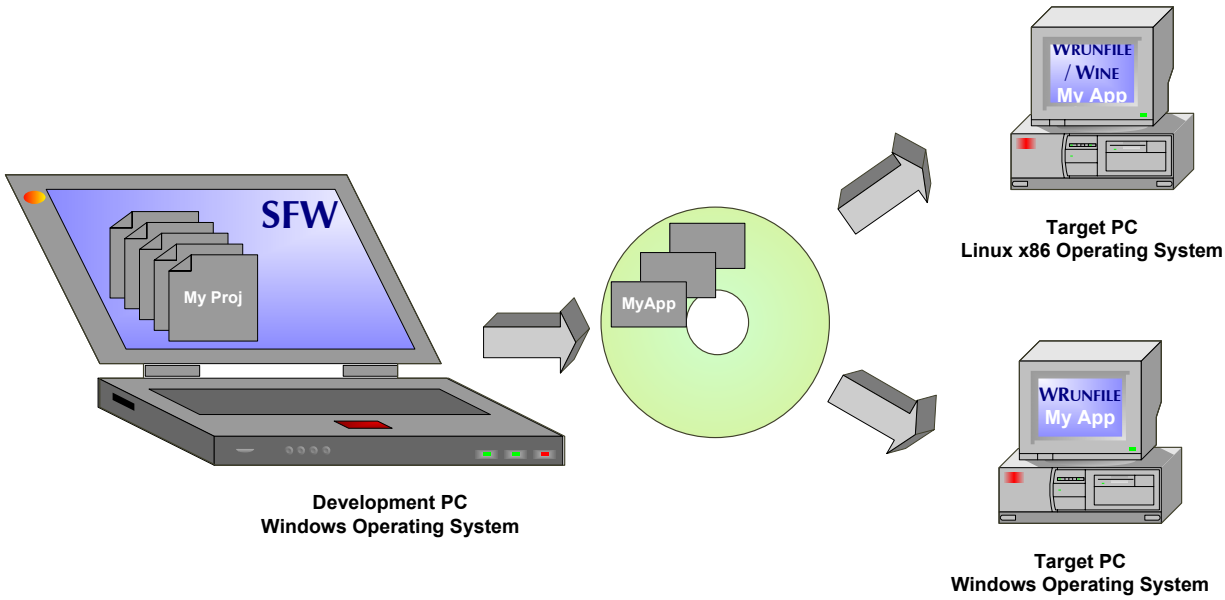
SUPER-FLASH is a Development System which operates in Windows environment and is able to produce applications to be installed on PCs equipped with various operating systems.

At present, the operating systems which can be used are Windows XP-Pro, Windows XP-E, Windows 7 (32/64 bit) and Linux through WINE.

The operations to be carried out for transferring an application from one operating system to another are minimal and mainly involve configuration of serial ports and printers.

For the Linux operating system, engine operation is based on WINE (Wine Is Not an Emulator). WINE makes a Linux version of the API available for Windows. Since SUPER-FLASH does not make reference to the MFC, compatibility is facilitated.

SUPER-FLASH: MULTIPLATFORM



4.9 Multilingual

SUPER-FLASH allows a single application to be maintained, even when addressed to foreign countries with different languages, since it provides the possibility of managing 50 dictionaries (potentially 50 different languages). Development of truly multilingual applications is therefore much easier.
Multilingual applications are implemented through Resources. Resources may be of the following types: Number, String, Filename and Key. They can be used in most of the application objects and in the system functions. Language selection can be made during the development stage or, with the application installed and online, from inside the application itself as well. Resources can also be used in the configuration phase: it becomes simple to associate a series of additional files with a specific dictionary, for example, with the Alarms files and user help online.

The Unicode support allows the development of applications (mono and multilingual) witch use languages with very large character set: Chinese, Japanese, Korean and so on).

Resources are also accessible from MICROC functions.

- 10,000 resources for each dictionary
- 50 different independent dictionaries
- Number type Resources
- String type Resources up to 1,000 characters
- Filename type Resources
- Key type Resources

4.10 MicroC

MICROC is the powerful C compiler integrated in SUPER-FLASH: it supports a simplified subset of the C ANSI standard. It implements syntax and the typical C operators, interprets the control structures, but does not manage the pointers. By means of the virtual type, it is easy to access the heterogeneous database of SUPER-FLASH variables.
MICROC is a powerful compiler independent of the hardware, and is simple and reliable, rich in functionalities and performances.
With MICROC, the user can extend the functionalities of the Development System enormously: in fact, more than 600 functions are available for numerous application fields.
Programs compiled using MICROC operate under strict control of the runtime engine. This way only correct instructions are carried out, keeping the high level of reliability that SUPER-FLASH has.
Since it does not produce a machine code, the programs do not have to be recompiled to be used on other platforms.

Here below are some of the possibilities offered by MICROC:

- Floating point calculations
- Calculations which entail trigonometric functions
- Development of communication protocols
- Runtime modification of the Variables characteristics
- Deferred Trend recording
- Deferred Alarm recording
- Importing, processing and exporting data generated by the applications (Trend, Alarms, Recipes, etc.)
- Development of fully personalized file management
- Development of completely free control functions
- Implementation of input data control functions
- Implementation of general control functions for data coherence
- Reduction of the SUPER-FLASH variables needed for an application
- Possibility of protecting your own know-how
- Development of processing drivers seen by the system as a normal peripheral
- Interaction with Event Management
- Interaction with SMARTDB

4.11 Integration

In general, HMI and supervision applications need to integrate with other levels of company information systems. Apart from natural connection with the process control (PLC, CNC, regulators, balances, etc.), the possibility of connecting several applications together and of making them communicate with the production management levels (MES or EPS system) is increasingly requested.

The subject of integration, already important nowadays, will become strategic in the very near future. At the base of all the functionalities which go towards allowing SUPER-FLASH to integrate with the surrounding world, lies its capacity to work efficiently on TCP/IP networks.
SUPER-FLASH makes various possibilities available, which have a different importance according to the type of horizontal and vertical integration which is to be made.

By horizontal integration, connection to software applications of the same level is intended, which can be carried out by means of:

- TCP/IP communication channels freely manageable from MICROC
- DDE Client and Server
- Modbus Master and Slave
- SUPER-FLASH Master and Slave
- SUPER-FLASH OPC CLIENT
- External DLL support
- Connection to local or remote Databases

By vertical integration, connection to software applications of different levels, in two distinct directions, is intended: downwards and upwards.

Downward connection can be made by means of:

- TCP/IP communication channels freely manageable from MICROC
- SUPER-FLASH Master
- Specific drivers for PLCs, thermoregulators, etc.
- Modbus Master
- SUPER-FLASH OPC Client
- Applicom Server (field buses and ethernet)
- External DLL support

Upward connection is possible by means of:

- TCP/IP communication channels freely manageable from MICROC
- Network file management
- DDE Slave
- MODBUS Slave
- SUPER-FLASH Slave
- External DLL support
- Connection to local or remote Databases

With regard to upward integration and with the future in mind, Automa's commitment to integration projects for production management and data collection becomes fundamental. Automa's expertise in this area guarantees its ability to deal with integration efficiently.
The current possibilities, although important and consistent, should therefore be considered as a solid start for the performances which will be included in the forthcoming versions of the product.

4.11.1 Integration with SMARTDB

Automa has now been specialised for years in integration between the different levels of information systems. Its expertise, acquired through a lot of hands-on experience, has led the company to making solutions for production management, data collection and integration available to its customers.
Selection of the best technology for connection with production management systems often falls to the Databases. This is a well-defined, solid and mature technology, which offers numerous possibilities, although it often requires expertise which is beyond the traditional area of knowledge of companies dealing in automation.
Automa comes to the aid of its customers by making a specific product available – SMARTDB, which allows a SUPER-FLASH application to transfer real data acquired directly from the field into the database and, at the same time, to receive instructions, recipes, and job orders to work with.
SMARTDB is an interfacing tool made with the intention of facilitating the approach to databases for those who are not already experts in this field.
Simplification has been obtained by making some precise and carefully weighed choices about the actual needs of those who develop HMI applications: the power offered by connections with databases has not been reduced, but some fundamental basic tools have been made particularly effective.
With MICROC and SMARTDB, the data collected by SUPER-FLASH can be sent to a local or remote database (in Internet). SMARTDB makes integration with the EPS/MES systems and implementation of functionalities possible for production management, which use real data taken directly from the field.
SMARTDB is based on ADO technology and exploits the SQL language.

4.11.2 Integration with MicroC

When one speaks of integration with production management systems (MES/EPS), one refers to problems which it is difficult to solve with a single software product.
In fact, the functionalities typically foreseen at MES level are much more well-organised and complex than those generally available at HMI level.
This means that each task becomes a project in itself: what is all right for one customer will probably not satisfy another. Moreover, having to interface with existing software, the panorama of the different solutions used by industries is really very vast.
It therefore becomes indispensable to have a true programming and processing language available in upward integration projects, which allows the limits typical of pre-packaged products to be overcome.
In these integration projects, MICROC fully shows its potential to the full. In fact, it is able to interact with event management of HMI applications and, by means of SMARTDB, to interact easily with company databases.

For integration projects, MICROC makes it possible to:

- Freely manage TCP/IP and UDP/IP communication channels
- Manage network files by filtering the sharing problems
- Access SUPER-FLASH event management
- Use SMARTDB for multiple connection with company databases
- Develop all the data processing coming in from production management
- Process, filter, record and publish all the input data from the process to make them reach the production management level

5 Contacting Automa

Automa is at your disposal to clarify any doubts, satisfy any curiosities you may have, and provide technical and commercial information about its products and services.

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6 Glossary

Application	a program aimed at solving some specific user requirements. In our case, SUPER-FLASH is a development system allowing applications to be developed destined to solve specific needs, mainly in the industrial sphere. It is a synonym of 'application'.
Algorithm	a group of rules that allow a given problem to be solved in finite time. It is important to understand the differences between an algorithm and a program: an algorithm is a procedure to be followed in order to solve a problem, no matter which language is being used; a program is about describing an algorithm in a specific programming language.
Compiler	a program which translates a source file written in a certain language into the corresponding executable program. MICROC translates source files written in C language into their corresponding programs, which can be executed by SUPER-FLASH.
EPS	Enterprise Production Systems: an environment where products providing decisional supports for production programming and management activities are inserted.
Execution of a program	an activity by which a computer executes program instructions sequentially to achieve the results for which it was designed.
HMI	Human-Machine Interface
Interface	a device or system placed between two other devices or systems in order to allow their interaction; by extension, it indicates the program or parts of program and the relative operating rules for allowing interaction between different programs and systems.
Programming language	an artificial language consisting of a group of terms (instructions and constructions) and of well-defined syntactic and semantic rules which allow human beings to communicate with a computer by means of developing programs.
MES	Manufacturing Enterprise Systems: an environment where products providing decisional supports for production programming and management activities are inserted.
Project	a container for all the information needed by the SUPER-FLASH Development System to generate an application.
Program	a sequence of instructions written in a certain programming language which describes an algorithm for a computer to solve a specific problem.
Executable program	a program destined directly to be executed by a computer, as it consists of instructions in machine language, i.e. sequences of codes that can be interpreted directly by the computer. An executable program is usually the result of translation of a source program carried out automatically by particular software called a *compiler*.
Source program	a program written in a high or medium level language which needs a translation phase (*interpretation* or *compilation*) so that it can then be executed by a computer.
SCADA	Supervisory Control And Data Acquisition
Development System	software for developing an application
Operating System	a basic computer program (or group of programs) which controls the physical (hardware) and logical resources (data structures, software) by regulating the order of the elementary operations (program uploading, data input, issue of results, hardware management, etc.) inherent to execution of other programs.